

**SPECIFICATION**  
**(Sprint Docket No. 1799)**

**5 TO ALL WHOM IT MAY CONCERN:**

Be it known that I, Dale Knoop, a citizen of the United States of America, and  
resident of Leawood, Kansas, have invented a new and useful:

**METHOD AND SYSTEM FOR SELECTING TRANSMISSION MODES  
FOR STREAMING MEDIA CONTENT TO A WIRELESS HANDSET**

the following of which is a specification.

10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65  
66  
67  
68  
69  
70  
71  
72  
73  
74  
75  
76  
77  
78  
79  
80  
81  
82  
83  
84  
85  
86  
87  
88  
89  
90  
91  
92  
93  
94  
95  
96  
97  
98  
99  
100  
101  
102  
103  
104  
105  
106  
107  
108  
109  
110  
111  
112  
113  
114  
115  
116  
117  
118  
119  
120  
121  
122  
123  
124  
125  
126  
127  
128  
129  
130  
131  
132  
133  
134  
135  
136  
137  
138  
139  
140  
141  
142  
143  
144  
145  
146  
147  
148  
149  
150  
151  
152  
153  
154  
155  
156  
157  
158  
159  
160  
161  
162  
163  
164  
165  
166  
167  
168  
169  
170  
171  
172  
173  
174  
175  
176  
177  
178  
179  
180  
181  
182  
183  
184  
185  
186  
187  
188  
189  
190  
191  
192  
193  
194  
195  
196  
197  
198  
199  
200  
201  
202  
203  
204  
205  
206  
207  
208  
209  
210  
211  
212  
213  
214  
215  
216  
217  
218  
219  
220  
221  
222  
223  
224  
225  
226  
227  
228  
229  
230  
231  
232  
233  
234  
235  
236  
237  
238  
239  
240  
241  
242  
243  
244  
245  
246  
247  
248  
249  
250  
251  
252  
253  
254  
255  
256  
257  
258  
259  
260  
261  
262  
263  
264  
265  
266  
267  
268  
269  
270  
271  
272  
273  
274  
275  
276  
277  
278  
279  
280  
281  
282  
283  
284  
285  
286  
287  
288  
289  
290  
291  
292  
293  
294  
295  
296  
297  
298  
299  
300  
301  
302  
303  
304  
305  
306  
307  
308  
309  
310  
311  
312  
313  
314  
315  
316  
317  
318  
319  
320  
321  
322  
323  
324  
325  
326  
327  
328  
329  
330  
331  
332  
333  
334  
335  
336  
337  
338  
339  
340  
341  
342  
343  
344  
345  
346  
347  
348  
349  
350  
351  
352  
353  
354  
355  
356  
357  
358  
359  
360  
361  
362  
363  
364  
365  
366  
367  
368  
369  
370  
371  
372  
373  
374  
375  
376  
377  
378  
379  
380  
381  
382  
383  
384  
385  
386  
387  
388  
389  
390  
391  
392  
393  
394  
395  
396  
397  
398  
399  
400  
401  
402  
403  
404  
405  
406  
407  
408  
409  
410  
411  
412  
413  
414  
415  
416  
417  
418  
419  
420  
421  
422  
423  
424  
425  
426  
427  
428  
429  
430  
431  
432  
433  
434  
435  
436  
437  
438  
439  
440  
441  
442  
443  
444  
445  
446  
447  
448  
449  
450  
451  
452  
453  
454  
455  
456  
457  
458  
459  
460  
461  
462  
463  
464  
465  
466  
467  
468  
469  
470  
471  
472  
473  
474  
475  
476  
477  
478  
479  
480  
481  
482  
483  
484  
485  
486  
487  
488  
489  
490  
491  
492  
493  
494  
495  
496  
497  
498  
499  
500  
501  
502  
503  
504  
505  
506  
507  
508  
509  
510  
511  
512  
513  
514  
515  
516  
517  
518  
519  
520  
521  
522  
523  
524  
525  
526  
527  
528  
529  
530  
531  
532  
533  
534  
535  
536  
537  
538  
539  
540  
541  
542  
543  
544  
545  
546  
547  
548  
549  
550  
551  
552  
553  
554  
555  
556  
557  
558  
559  
560  
561  
562  
563  
564  
565  
566  
567  
568  
569  
570  
571  
572  
573  
574  
575  
576  
577  
578  
579  
580  
581  
582  
583  
584  
585  
586  
587  
588  
589  
590  
591  
592  
593  
594  
595  
596  
597  
598  
599  
600  
601  
602  
603  
604  
605  
606  
607  
608  
609  
610  
611  
612  
613  
614  
615  
616  
617  
618  
619  
620  
621  
622  
623  
624  
625  
626  
627  
628  
629  
630  
631  
632  
633  
634  
635  
636  
637  
638  
639  
640  
641  
642  
643  
644  
645  
646  
647  
648  
649  
650  
651  
652  
653  
654  
655  
656  
657  
658  
659  
660  
661  
662  
663  
664  
665  
666  
667  
668  
669  
670  
671  
672  
673  
674  
675  
676  
677  
678  
679  
680  
681  
682  
683  
684  
685  
686  
687  
688  
689  
690  
691  
692  
693  
694  
695  
696  
697  
698  
699  
700  
701  
702  
703  
704  
705  
706  
707  
708  
709  
710  
711  
712  
713  
714  
715  
716  
717  
718  
719  
720  
721  
722  
723  
724  
725  
726  
727  
728  
729  
730  
731  
732  
733  
734  
735  
736  
737  
738  
739  
740  
741  
742  
743  
744  
745  
746  
747  
748  
749  
750  
751  
752  
753  
754  
755  
756  
757  
758  
759  
760  
761  
762  
763  
764  
765  
766  
767  
768  
769  
770  
771  
772  
773  
774  
775  
776  
777  
778  
779  
780  
781  
782  
783  
784  
785  
786  
787  
788  
789  
790  
791  
792  
793  
794  
795  
796  
797  
798  
799  
800  
801  
802  
803  
804  
805  
806  
807  
808  
809  
810  
811  
812  
813  
814  
815  
816  
817  
818  
819  
820  
821  
822  
823  
824  
825  
826  
827  
828  
829  
830  
831  
832  
833  
834  
835  
836  
837  
838  
839  
840  
841  
842  
843  
844  
845  
846  
847  
848  
849  
850  
851  
852  
853  
854  
855  
856  
857  
858  
859  
860  
861  
862  
863  
864  
865  
866  
867  
868  
869  
870  
871  
872  
873  
874  
875  
876  
877  
878  
879  
880  
881  
882  
883  
884  
885  
886  
887  
888  
889  
890  
891  
892  
893  
894  
895  
896  
897  
898  
899  
900  
901  
902  
903  
904  
905  
906  
907  
908  
909  
910  
911  
912  
913  
914  
915  
916  
917  
918  
919  
920  
921  
922  
923  
924  
925  
926  
927  
928  
929  
930  
931  
932  
933  
934  
935  
936  
937  
938  
939  
940  
941  
942  
943  
944  
945  
946  
947  
948  
949  
950  
951  
952  
953  
954  
955  
956  
957  
958  
959  
960  
961  
962  
963  
964  
965  
966  
967  
968  
969  
970  
971  
972  
973  
974  
975  
976  
977  
978  
979  
980  
981  
982  
983  
984  
985  
986  
987  
988  
989  
990  
991  
992  
993  
994  
995  
996  
997  
998  
999  
1000  
1001  
1002  
1003  
1004  
1005  
1006  
1007  
1008  
1009  
1010  
1011  
1012  
1013  
1014  
1015  
1016  
1017  
1018  
1019  
1020  
1021  
1022  
1023  
1024  
1025  
1026  
1027  
1028  
1029  
1030  
1031  
1032  
1033  
1034  
1035  
1036  
1037  
1038  
1039  
1040  
1041  
1042  
1043  
1044  
1045  
1046  
1047  
1048  
1049  
1050  
1051  
1052  
1053  
1054  
1055  
1056  
1057  
1058  
1059  
1060  
1061  
1062  
1063  
1064  
1065  
1066  
1067  
1068  
1069  
1070  
1071  
1072  
1073  
1074  
1075  
1076  
1077  
1078  
1079  
1080  
1081  
1082  
1083  
1084  
1085  
1086  
1087  
1088  
1089  
1090  
1091  
1092  
1093  
1094  
1095  
1096  
1097  
1098  
1099  
1100  
1101  
1102  
1103  
1104  
1105  
1106  
1107  
1108  
1109  
1110  
1111  
1112  
1113  
1114  
1115  
1116  
1117  
1118  
1119  
1120  
1121  
1122  
1123  
1124  
1125  
1126  
1127  
1128  
1129  
1130  
1131  
1132  
1133  
1134  
1135  
1136  
1137  
1138  
1139  
1140  
1141  
1142  
1143  
1144  
1145  
1146  
1147  
1148  
1149  
1150  
1151  
1152  
1153  
1154  
1155  
1156  
1157  
1158  
1159  
1160  
1161  
1162  
1163  
1164  
1165  
1166  
1167  
1168  
1169  
1170  
1171  
1172  
1173  
1174  
1175  
1176  
1177  
1178  
1179  
1180  
1181  
1182  
1183  
1184  
1185  
1186  
1187  
1188  
1189  
1190  
1191  
1192  
1193  
1194  
1195  
1196  
1197  
1198  
1199  
1200  
1201  
1202  
1203  
1204  
1205  
1206  
1207  
1208  
1209  
1210  
1211  
1212  
1213  
1214  
1215  
1216  
1217  
1218  
1219  
1220  
1221  
1222  
1223  
1224  
1225  
1226  
1227  
1228  
1229  
1230  
1231  
1232  
1233  
1234  
1235  
1236  
1237  
1238  
1239  
1240  
1241  
1242  
1243  
1244  
1245  
1246  
1247  
1248  
1249  
1250  
1251  
1252  
1253  
1254  
1255  
1256  
1257  
1258  
1259  
1260  
1261  
1262  
1263  
1264  
1265  
1266  
1267  
1268  
1269  
1270  
1271  
1272  
1273  
1274  
1275  
1276  
1277  
1278  
1279  
1280  
1281  
1282  
1283  
1284  
1285  
1286  
1287  
1288  
1289  
1290  
1291  
1292  
1293  
1294  
1295  
1296  
1297  
1298  
1299  
1300  
1301  
1302  
1303  
1304  
1305  
1306  
1307  
1308  
1309  
1310  
1311  
1312  
1313  
1314  
1315  
1316  
1317  
1318  
1319  
1320  
1321  
1322  
1323  
1324  
1325  
1326  
1327  
1328  
1329  
1330  
1331  
1332  
1333  
1334  
1335  
1336  
1337  
1338  
1339  
1340  
1341  
1342  
1343  
1344  
1345  
1346  
1347  
1348  
1349  
1350  
1351  
1352  
1353  
1354  
1355  
1356  
1357  
1358  
1359  
1360  
1361  
1362  
1363  
1364  
1365  
1366  
1367  
1368  
1369  
1370  
1371  
1372  
1373  
1374  
1375  
1376  
1377  
1378  
1379  
1380  
1381  
1382  
1383  
1384  
1385  
1386  
1387  
1388  
1389  
1390  
1391  
1392  
1393  
1394  
1395  
1396  
1397  
1398  
1399  
1400  
1401  
1402  
1403  
1404  
1405  
1406  
1407  
1408  
1409  
1410  
1411  
1412  
1413  
1414  
1415  
1416  
1417  
1418  
1419  
1420  
1421  
1422  
1423  
1424  
1425  
1426  
1427  
1428  
1429  
1430  
1431  
1432  
1433  
1434  
1435  
1436  
1437  
1438  
1439  
1440  
1441  
1442  
1443  
1444  
1445  
1446  
1447  
1448  
1449  
1450  
1451  
1452  
1453  
1454  
1455  
1456  
1457  
1458  
1459  
1460  
1461  
1462  
1463  
1464  
1465  
1466  
1467  
1468  
1469  
1470  
1471  
1472  
1473  
1474  
1475  
1476  
1477  
1478  
1479  
1480  
1481  
1482  
1483  
1484  
1485  
1486  
1487  
1488  
1489  
1490  
1491  
1492  
1493  
1494  
1495  
1496  
1497  
1498  
1499  
1500  
1501  
1502  
1503  
1504  
1505  
1506  
1507  
1508  
1509  
1510  
1511  
1512  
1513  
1514  
1515  
1516  
1517  
1518  
1519  
1520  
1521  
1522  
1523  
1524  
1525  
1526  
1527  
1528  
1529  
1530  
1531  
1532  
1533  
1534  
1535  
1536  
1537  
1538  
1539  
1540  
1541  
1542  
1543  
1544  
1545  
1546  
1547  
1548  
1549  
1550  
1551  
1552  
1553  
1554  
1555  
1556  
1557  
1558  
1559  
1560  
1561  
1562  
1563  
1564  
1565  
1566  
1567  
1568  
1569  
1570  
1571  
1572  
1573  
1574  
1575  
1576  
1577  
1578  
1579  
1580  
1581  
1582  
1583  
1584  
1585  
1586  
1587  
1588  
1589  
1590  
1591  
1592  
1593  
1594  
1595  
1596  
1597  
1598  
1599  
1600  
1601  
1602  
1603  
1604  
1605  
1606  
1607  
1608  
1609  
1610  
1611  
1612  
1613  
1614  
1615  
1616  
1617  
1618  
1619  
1620  
1621  
1622  
1623  
1624  
1625  
1626  
1627  
1628  
1629  
1630  
1631  
1632  
1633  
1634  
1635  
1636  
1637  
1638  
1639  
1640  
1641  
1642  
1643  
1644  
1645  
1646  
1647  
1648  
1649  
1650  
1651  
1652  
1653  
1654  
1655  
1656  
1657  
1658  
1659  
1660  
1661  
1662  
1663  
1664  
1665  
1666  
1667  
1668  
1669  
1670  
1671  
1672  
1673  
1674  
1675  
1676  
1677  
1678  
1679  
1680  
1681  
1682  
1683  
1684  
1685  
1686  
1687  
1688  
1689  
1690  
1691  
1692  
1693  
1694  
1695  
1696  
1697  
1698  
1699  
1700  
1701  
1702  
1703  
1704  
1705  
1706  
1707  
1708  
1709  
1710  
1711  
1712  
1713  
1714  
1715  
1716  
1717  
1718  
1719  
1720  
1721  
1722  
1723  
1724  
1725  
1726  
1727  
1728  
1729  
1730  
1731  
1732  
1733  
1734  
1735  
1736  
1737  
1738  
1739  
1740  
1741  
1742  
1743  
1744  
1745  
1746  
1747  
1748  
1749  
1750  
1751  
1752  
1753  
1754  
1755  
1756  
1757  
1758  
1759  
1760  
1761  
1762  
1763  
1764  
1765  
1766  
1767  
1768  
1769  
1770  
1771  
1772  
1773  
1774  
1775  
1776  
1777  
1778  
1779  
1780  
1781  
1782  
1783  
1784  
1785  
1786  
1787  
1788  
1789  
1790  
1791  
1792  
1793  
1794  
1795  
1796  
1797  
1798  
1799  
1800  
1801  
1802  
1803  
1804  
1805  
1806  
1807  
1808  
1809  
1810  
1811  
1812  
1813  
1814  
1815  
1816  
1817  
1818  
1819  
1820  
1821  
1822  
1823  
1824  
1825  
1826  
1827  
1828  
1829  
1830  
1831  
1832  
1833  
1834  
1835  
1836  
1837  
1838  
1839  
1840  
1841  
1842  
1843  
1844  
1845  
1846  
1847  
1848  
1849  
1850  
1851  
1852  
1853  
1854  
1855  
1856  
1857  
1858  
1859  
1860  
1861  
1862  
1863  
1864  
1865  
1866  
1867  
1868  
1869  
1870  
1871  
1872  
1873  
1874  
1875  
1876  
1877  
1878  
1879  
1880  
1881  
1882  
1883  
1884  
1885  
1886  
1887  
1888  
1889  
1890  
1891  
1892  
1893  
1894  
1895  
1896  
1897  
1898  
1899  
1900  
1901  
1902  
1903  
1904  
1905  
1906  
1907  
1908  
1909  
1910  
1911  
1912  
1913  
1914  
1915  
1916  
1917  
1918  
1919  
1920  
1921  
1922  
1923  
1924  
1925  
1926  
1927  
1928  
1929  
1930  
1931  
1932  
1933  
1934  
1935  
1936  
1937  
1938  
1939  
1940  
1941  
1942  
1943  
1944  
1945  
1946  
1947  
1948  
1949  
1950  
1951  
1952  
1953  
1954  
1955  
1956  
1957  
1958  
1959  
1960  
1961  
1962  
1963  
1964  
1965  
1966  
1967  
1968  
1969  
1970  
1971  
1972  
1973  
1974  
1975  
1976  
1977  
1978  
1979  
1980  
1981  
1982  
1983  
1984  
1985  
1986  
1987  
1988  
1989  
1990  
1991  
1992  
1993  
1994  
1995  
1996  
1997  
1998  
1999  
2000  
2001  
2002  
2003  
2004  
2005  
2006  
2007  
2008  
2009  
2010  
2011  
2012  
2013  
2014  
2015  
2016  
2017  
2018  
2019  
2020  
2021  
2022  
2023  
2024  
2025  
2026  
2027  
2028  
2029  
2030  
2031  
2032  
2033  
2034  
2035  
2036  
2037  
2038  
2039  
2040  
2041  
2042  
2043  
2044  
2045  
2046  
2047  
2048  
2049  
2050  
2051  
2052  
2053  
2054  
2055  
2056  
2057  
2058  
2059  
2060  
2061  
2062  
2063  
2064  
2065  
2066  
2067  
2068  
2069  
2070  
2071  
2072  
2073  
2074  
2075  
2076  
2077  
2078  
2079  
2080  
2081  
2082  
2083  
2084  
2085  
2086  
2087  
2088  
2089  
2090  
2091  
2092  
2093  
2094  
2095  
2096  
2097  
2098  
2099  
2100  
2101  
2102  
2103  
2104  
2105  
2106  
2107  
2108  
2109  
2110  
2111  
2112  
2113  
2114  
2115  
2116  
2117  
2118  
2119  
2120  
2121  
2122  
2123  
2124  
2125  
2126  
2127  
2128  
2129  
2130  
2131  
2132  
2133  
2134  
2135  
2136  
2137  
2138  
2139  
2140  
2141  
2142  
2143  
2144  
2145  
2146  
2147  
2148  
2149  
2150  
2151  
2152  
2153  
2154  
2155  
2156  
2157  
2158  
2159  
2160  
2161  
2162  
2163  
2164  
2165  
2166  
2167  
2168  
2169  
2170  
2171  
2172  
2173  
2174  
2175  
2176  
2177  
2178  
2179  
2180  
2181  
2182  
2183  
2184  
2185  
2186  
2187  
2188  
2189  
2190  
2191  
2192  
2193  
2194  
2195  
2196  
2197  
2198  
2199  
2200

## **BACKGROUND**

### **1. Field of the Invention**

The present invention relates to client-server computing. More specifically, it relates to a method for selecting transmission modes for streaming media content from a media server to a wireless handset.

### **2. Description of Related Art**

A client device, such as a wireless handset, can connect to a media server. Once connected to the media server, the client device may receive real-time streaming media content from the media server. For example, the client device may receive a video clip that is played on the client device's display screen in real-time. Simultaneously, the client device may receive audio that is played on an audio speaker and that accompanies the video clip. Other media content, such as audio-only files or still images, may also be streamed from the media server to the client device.

The client device may play media content using a media player application. The media content is streamed to the client using a transmission mode. A transmission mode generally defines properties used for transmitting the media content to the client device, and the media player application may support one or more transmission modes. For example, the media player application may support variable bit-rate transmissions, audio and video media content, and various media content formats. In order to increase the number of transmission modes supported by the client device, more than one media player application may reside on the client device.

When the client device connects to the media server, the media server may send the client device a selection of media content choices, including transmission modes.

The client device user may then select from one of the media content choices and a corresponding transmission mode. In choosing media content from the choices provided by the media server, a user may select media content that cannot be played on the client device. For example, the user may select media content that is not supported by a media player application on the client device. The media player application may not recognize the format used by the media server, and it may not be able to properly output the media content on the client device. In another example, the user may select media content that is not support by the output features of the client device. The media player application may recognize the format, but the device may not have the output capabilities to player the media content. For instance, the media player application may receive a video clip from the server, but the client device may not have a display screen.

The client device may connect to the media server using a wireless connection. For example, the client device may connect to a wireless network, and the wireless network may then provide connectivity to the media server. The wireless connection, however, may not support all possible transmission modes, because, for instance, the wireless connection may only support a limited bandwidth. The limited bandwidth on the wireless network may limit the maximum bit-rate used to send data from the media server to the client device, thereby limiting the permissible transmission modes to those transmission modes that use a bit-rate which is less than the maximum supported by the wireless connection. Other factors on the wireless network may also limit the permissible transmission modes. For instance, the wireless network may be congested, and it may not be able to support high bit-rate connections. In spite of these, or other, limitations of the wireless network, the media server may provide the user of a client device with media

content choices and transmission modes that are not supported by the wireless network, and the user of a client device may select a media content choice and a transmission mode that are not supported by the wireless network.

Therefore, there exists a need to provide a better way of selecting transmission

5 modes for streaming media content to a wireless handset.

McDonnell Boehnen  
Huibert & Berghoff  
300 South Wacker Drive  
Chicago, Illinois 60606  
(312) 913-0001

## SUMMARY

A wireless handset may connect to a media server in order to receive streaming media content. The wireless handset may send the media server one or more indications of the wireless handset's presentation capabilities. In response, the media server may  
5 send the wireless handset a list of available media content, and the media content may correspond to one or more transmission modes. The list of available media content, and the corresponding transmission modes, may be tailored, at least in part, based on the presentation capabilities of the wireless handset.

In one embodiment, the media server may tailor the list of available media content  
10 based, at least in part, on whether the media content is supported by one or more media player applications on the wireless handset. In another embodiment, the media server may tailor the list of available media content based, at least in part, on whether the output features of the wireless handset support the output of the media content. In yet another embodiment, the media server may limit the list of available media content based, at least  
15 in part, on specifications provided by a user. Once the tailored list of media content has been provided to the wireless handset, a wireless handset user may then select from the list. Following the user's selection, the media server may then stream the media content to the wireless handset using the selected transmission mode.

These as well as other aspects and advantages of the present invention will  
20 become apparent to those of ordinary skill in the art by reading the following detailed description, with appropriate reference to the accompanying drawings.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

An exemplary embodiment of the present invention is described herein with reference to the drawings, in which:

Figure 1 is a flowchart illustrating one embodiment of a process for a wireless handset receiving streaming media content from a media server;

Figure 2 shows an exemplary architecture that may be used to implement the process described in Figure 1;

Figure 3 is a flowchart that depicts one possible embodiment for providing a wireless handset with tailored media content;

Figure 4 is a flowchart that depicts an alternate embodiment for providing a wireless handset with tailored media content;

Figure 5 is a flowchart that shows one embodiment of a process for selecting a transmission mode; and

Figure 6 is a flowchart that shows an embodiment of a process for selecting media content.

## **DETAILED DESCRIPTION OF AN EXEMPLARY EMBODIMENT**

Figure 1 is a flowchart illustrating one embodiment of a process for a wireless handset receiving streaming media content from a media server. At Step 50, a wireless handset initiates a connection with a media server. Next, at Step 52, the media server determines the presentation capabilities of the wireless handset. Then, at Step 54, the media server sends the wireless handset a list of media content choices. The list of media content choices may indicate the transmission modes for delivering the streaming media content to the wireless handset, and the list of media content choices may be tailored to the presentation capabilities of the wireless handset. At Step 56, the wireless handset presents those choices to a user. Then, at Step 58, the user selects one of the media content and transmission mode choices. The wireless handset then informs the media server of the user's choice, as shown at Step 60. At Step 62, the media server streams the media content to the wireless handset at the selected transmission mode. Finally, at Step 64, the wireless handset presents the media content to the user.

### 1. Exemplary Architecture

Figure 2 shows an exemplary architecture for facilitating communication between a wireless handset 100 and a media server 112. In a preferred embodiment, the wireless handset 100 is a third generation (3G) cellular telephone. The wireless handset 100 may include a display screen, an audio speaker, a keypad, or other input or output features. In a preferred embodiment, the wireless handset 100 is multimedia equipped, and it is capable of displaying video and playing audio. Other devices may also be used, and they may contain a fewer or greater number of features. For example, in one embodiment, the wireless handset 100 is only capable of playing audio. In another embodiment, the

wireless handset 100 is a wirelessly equipped personal digital assistant (PDA). In yet another embodiment, the wireless handset 100 is a wirelessly equipped computer.

The wireless handset 100 ordinarily includes a processor and memory.

Applications can be stored in the memory and executed on the processor. The

5 applications may utilize the various input and output features of the wireless handset 100, and, thereby, interact with the user. For example, an application may output video on a display screen, it may play audio on a speaker, it may receive input from a keypad, or it perform a combination of these or other actions. Preferably the memory contains a web browser application (such as the OpenWave™ Microbrowser) and a media content player  
10 application. One or more media content player applications may be stored in memory, and they can be used to receive media content from the media server and to present the media content on the wireless handset's output features. A wireless handset 100 may support more than one media content application, and media content player applications may be added or removed from the wireless handset 100.

15 The media server 112 may be any computer or other device capable of streaming media. In a preferred embodiment, the media server 112 is a server class computer, and it contains a processor and memory. The processor executes applications, which may be stored in memory. Preferably, the media server 112 stores a web server application, a streaming media application and media content. The web server application generally  
20 allows users to connect to the media server through a web page or web card, although it may also support other methods of connections or other functions. The streaming media application, among other functions, may be used to stream media content to a wireless handset 100 connected to the media server 112. Other applications, however, may be



used to send media content to the wireless handset 100. The media server 112 may support additional applications, and it may combine the functionality needed to stream media content into one or more other applications.

As previously indicated, the media server 112 generally includes memory that stores media content. Media content may be stored in the memory using a variety of different data storage devices. For example, the media content may be stored on a hard disk or a floppy disk. Additionally, it may be stored on a CD-ROM, a tape drive, a zip drive, or any other number of data storage devices. Media content may also be stored on a combination of data storage devices. For example, the media server 112 may store some media content files on a hard disk, while it may store other media content files on a CD-ROM drive. Other combinations are also possible.

In a robust arrangement, a given instance of media content can be stored as a single file in the media server's memory. The file can be transmitted to a wireless handset 100 using one or more different transmission modes. A transmission mode generally specifies parameters used to send media content to the wireless handset 100. A transmission mode can specify, for instance: a high bit rate, a low bit rate, other specific bit rates, video only, audio only, video plus audio, and periodic stills plus audio. This list of parameters is not exhaustive, and other parameters may also be specified. Alternatively, a media content file might correspond to only one transmission mode.

Combinations of these or other method can be used to store multiple files and transmission modes. In addition to specifying transmission parameters, such as bit-rates or audio/video capabilities, a transmission mode may also specify the format of the media content.

Each instance of media content may be stored in one or more different encoded formats. A format generally defines a procedure for storing audio, video or other data in a stream of bits. Then, at a later time, the format can be used to reconstruct the stream of bits into the original representation. Examples of common formats include JPEG, MPEG and MP3, but many other formats for media content are available, and these may also be used.

In a preferred embodiment, the wireless handset 100 and the media server 112 communicate over the Internet 110 or over another public or private network. The wireless handset 100 connects to a cellular network, and the cellular network, in turn, provides connectivity to the Internet 110. The media server 112 also connects to the Internet 110. Once the media server 112 and the wireless handset 100 are both connected to the Internet 110, they can exchange data.

In particular, the wireless handset 100 is linked by an air interface to a base station 102. The wireless handset 100 can communicate with the base station 102 using a variety of different protocols. In a preferred embodiment, the wireless handset 100 communicates with the base station 102 using Code Division Multiple Access (CDMA). CDMA provides a method for sending wireless signals between the wireless handset 100 and the base station 102. In a CDMA system the base station 102 communicates with the wireless handset 100 over a spread spectrum of frequencies. Typical components for CDMA systems include those described in the Telecommunications Industry Association (TIA) standard, ANSI/TIA/EIA-95-B-99, dated February 3, 1999, which is incorporated herein by reference in its entirety. Time Division Multiple Access (TDMA) is another popular method for wireless communications. In TDMA systems, the base station 102

typically communicates on a group of frequencies, and each frequency may itself carry at least one multiplexed call. The Global System for Mobile Communications (GSM) or another method may also be used.

The base station 102 is coupled to a base station controller (BSC) 104. The BSC 104 connects with a packet data serving node (PDSN) 106. The PDSN 106 provides connectivity, to a packet-switched network, such as the Internet 110. Once the wireless handset 100 connects to the Internet 110 through the telecommunications network, it can exchange data with other devices also connected to the Internet 110. This may be done using an appropriately supported protocol.

The wireless handset 100 may exchange data over the Internet 100 using a protocol suite, such as the Internet Protocol (IP) and the Transmission Control Protocol (TCP). TCP is one connection-oriented protocol used to send data over a network, such as the Internet. When used in conjunction with other protocols, such as IP, TCP provides a format for breaking a data message into segments, transmitting the segments over the network to a receiver, and reassembling the segments at the receiver to form the original data message.

IP provides a method for transmitting data between devices on the same or on different networks. Each device is assigned an IP address, which is 32-bits long. The IP address assigned to a device is usually globally unique across the connected networks, and this allows data to be accurately sent between devices on different networks. Data to be transmitted between devices is placed into an IP segment. The header of the IP segment contains the source and destination IP addresses of the two communicating devices. The segment is sent over the network, and, using the destination device's IP

address contained in the header, appropriately routed to the destination device. The segment may travel through different devices and across different networks before ultimately reaching its destination, and the IP address helps to ensure accurate routing through these devices.

5 IP, however, does not provide a mechanism to assure that segments will be received at their intended destination. They may be lost during transmission due to data corruption, buffer overflow, equipment failure or other problems. TCP complements IP by ensuring reliable end-to-end transmission of the segments. Among other functions, TCP handles lost or corrupted segments, and it reassembles segments that arrive at their  
10 destination out of order. TCP/IP is one method of establishing a connection between the handset and media server, and other Internet or network protocols may also be used.

For example, the wireless handset may use Mobile IP, which is an extension of IP. IP can be used to connect devices on separate networks. An IP address is usually associated with one particular network; however, a wireless device with an assigned IP  
15 address may roam through more than one network during a call. Mobile IP is an extension of the IP protocol, and Mobile IP allows a device to move across different networks although its IP address may only be associated with one particular network. Mobile IP is described in detail in the Internet Engineering Task Force Request for Comment 2002, C. Perkins, October 1996, which is incorporated herein by reference in  
20 its entirety.

The media server 112 may also connect to the Internet 110. For instance, the media server 112 may be part of a local area network (LAN), and it may connect to the LAN using a network interface card (NIC). The LAN, in turn, may provide connectivity

to the Internet 110 through an Internet Service Provider (ISP) or another gateway.

Alternatively, the media server 112 may connect to a private intranet (e.g., a core packet network of a wireless service provider) or to another network that provides connectivity to the Internet 110.

5           Once connected to the Internet 110, the wireless handset 100 and the media server 112 can communicate with each other using a variety of different protocols. In one embodiment, the wireless handset 100 and the media server 112 establish a connection and exchange data using the TCP/IP protocols. In another embodiment, and as previously described, the wireless handset 100 may use Mobile IP in conjunction with  
10   TCP. Many other protocols exist for exchanging data between devices connected to the Internet or to other networks, and these may also be used.

The foregoing discussion illustrates one exemplary embodiment of system for communication between a wireless handset 100 and a media server 112. Many variations may be made to the system shown in Figure 2, and many other systems may also be used.

15   For example, changes may be made to the configuration of the cellular network. In another example, the media server 112 may interface with the Internet in a different manner. In yet another example, the wireless handset 100 and the media server 112 may reside on the same network, and they may not communicate over the Internet. These examples are not exhaustive, and other variations are also possible.

## 20           2. Exemplary Operation

According to one embodiment, when a user wishes to obtain media content from the media server, the user invokes a suitable application on the wireless handset. For instance, the user may start a media content player, a web browser or another application.

Ordinarily after the user starts the application, the wireless handset attempts to connect to the media server. This may be done by first connecting to the wireless handset's cellular network. Then, once connected to the cellular network, the wireless handset can connect to the Internet and then ultimately to the media server.

5           The wireless handset may connect to its cellular network, for instance, by communicating with the base station, or other access point, in the cellular network.

While the cellular network connection preferably occurs automatically upon starting the application, it may also be established manually by the user or in another way.

10           Alternatively, the wireless handset may already be connected to the cellular network upon starting the application. Then, once the application runs, it uses the existing cellular network connection to access the Internet and connect to the media server.

          After the wireless handset connects to the Internet, generally through the cellular network, the application may establish a connection and communicate with the media server in a variety of ways. For example, using a web browser on the wireless handset  
15           (which may also be referred to as a microbrowser), the user may browse to a web card. The media server hosts the web card, which is the microbrowser analog of a Hypertext Markup Language (HTML) web page. Alternatively, the user may have invoked a different application, such as a media content player, and the application may use a different method for interfacing with the media server. The web browser or other  
20           application may use one or more different protocols to connect and exchange data with the media server. In a preferred embodiment, the wireless handset establishes a connection with the media server using the TCP/IP protocol suite, but other methods may also be used.

As another example, the user may establish a connection with the media server by invoking an option on the media player application that sends a standard or proprietary session initiation request to the media server. For example, the media player application may send a SIP INVITE request to the media server. SIP stands for “Session Initiation Protocol” and is described in detail in the Internet Engineering Task Force Request for Comment 2543, Handley et al., March 1999, which is incorporated herein by reference in its entirety. The protocol provides a method by which a session can be established between two or more devices. The structure of a SIP message is similar to the Hypertext Transfer Protocol (HTTP), which is well known.

Once the wireless handset and the media server have established a connection, they may engage in a procedure to determine the media presentation capabilities of the wireless handset; although, as will be discussed later, the presentation capabilities may also be determined during the connection process. The media presentation capabilities of the wireless handset may be determined, for example, by sending a capability indication from the wireless handset to the media server indicating the wireless handset’s presentation capabilities. The presentation capabilities of the wireless handset may be based on the wireless handset’s make and model, the presentation capabilities of applications on the wireless handset or other factors.

To determine the wireless handset’s presentation capabilities, for example, an application on the wireless handset may send the media server an indication of the make and model of the wireless handset. The media server may have in its memory, or otherwise have access to, a translation table that correlates makes and models of wireless handsets with their presentation capabilities. The translation table may negatively

indicate the presentation capabilities of a certain make and model of wireless handset, such as, that the handset does not support video, does not support data exchanges above a certain bit rate, or other limitations. Alternatively, the translation table may affirmatively indicate the presentation capabilities of the wireless handset, such as that it supports

5 audio, it supports a certain maximum bit rate, or other characteristics. In another embodiment, the translation table may contain both affirmative and negative indications of a wireless handset's capabilities. When the media server receives the make and model of the wireless handset, it may then determine the presentation capabilities of the wireless handset by using the translation table.

10 Likewise, the application may send to the media server its name, version number, or other information. The media server may then use a translation table to determine the presentation capabilities of the application. The presentation capabilities of an application may define, for example, the wireless handset's output features that the application is capable of using, formats the application recognizes, transmission rates the

15 application supports or other capabilities. The application may, for example, only support audio media content. Also, it may only support certain media content formats, such as MPEG, or other transmission parameters, such as a bit-rate below 300 kbs. The application may also have other presentation limitations.

In addition to sending information about itself, the application may also send

20 information about other applications on the wireless handset that could also be used to process media content. The application may get information about other applications available on the wireless handset from a variety of different sources. In one example, the application may access a registry stored on the wireless handset. The registry may



contain information about other applications that are available on the wireless handset.

The registry may be periodically updated to reflect applications that are installed on the wireless handset or removed from the wireless handset.

In another embodiment, the application on the wireless handset may send the  
5 media server a more direct indication of the wireless handset's capabilities. For instance, the application may send the media server the set of parameters that indicate the presentation capabilities of the wireless handset. Additionally, the application may send the media server an indication of the presentation capabilities supported by that application or by other applications on the wireless handset. Further, the application may  
10 send the media server presentation capabilities specified by the user. A combination of these methods may also be used.

For example, the media server may receive a make and model of a wireless handset, which the media server can then use to lookup the handset's presentation capabilities. Additionally, the wireless handset may send a list of presentation  
15 capabilities to the media server. The list of presentation capabilities may update the presentation capabilities found in the media server's translation table; it may contain information about applications on the wireless handset; it may contain user-specified presentation capabilities; or, it may otherwise provide presentation capability information. The presentation capability list may then be used to supplement the  
20 presentation capabilities determined from the translation table.

In one embodiment, the media player application can be configured with parameters indicating permissible transmission modes, and this information can be sent to the media server to use in determining the wireless handset's presentation capabilities.

The permissible transmission modes may correspond to transmission modes that are supported by the capabilities of the wireless handset or are supported by the media player applications. The parameters may be varied based on a user's selections. For example, the parameters may have default values corresponding to the transmission modes

5 supported by the wireless handset and its applications. Then, the user may further limit the transmission modes to those that are acceptable to the user. It is possible that a user may select transmission modes that are not supported by the wireless handset or its applications, and it is also possible that the user may not select transmission modes that otherwise would be supported by the wireless handset or its applications. A user can set  
10 these parameters, for instance, through a configuration program on the wireless handset or through the application. The user may initially configure the parameters when the application is loaded onto the wireless handset, or the user may configure them at a later time. The wireless handset might also come preprogrammed from the manufacturer with these parameters, such as in a separate configuration file accessible by the media player  
15 application. The media player application may also come with a default set of parameters that may be used unless the user makes an alternate selection.

Preferably, the selected parameters correspond to the capabilities of the wireless handset and its applications. For example, if the media player application and wireless handset are able to receive and present streaming media in any mode from high bit rate  
20 audio and video down to low bit rate audio-only, the media player application may be configured with a list of transmission modes that includes those modes. However, if the combination of the media player application and the wireless handset are able to receive and present streaming audio but are only able to receive and present streaming video at

only a very slow frame rate, the media player application may be configured with a list of transmission modes that excludes the high bit rate audio and video mode. Other configurations are also possible.

Once the wireless handset and applications have been configured, that

5 information may be sent to the media server to be used in determining the wireless handset's presentation capabilities. For instance, when an application establishes a connection with a media server, the application may then send information to the media server that can be used to determine the wireless handset's presentation capabilities. The presentation capabilities may be determined in a manner previously described, or in

10 another way. For example, the application may send the make and model of the wireless handset, which is then used to determine the wireless handset's presentation capabilities by reference to a translation table. The application might also send a list of available applications, which are also used to determine the wireless handset's presentation capabilities also by reference to a translation table. The application may additionally

15 provide information specified in one or more of the application's or wireless handset's configuration files. It is also possible to send only one indication, such as only the make and mode of the wireless handset, only the name and version of the application, or only information from a configuration file. Other combinations of this or other information may also be sent.

20 While the presentation capabilities can be specified after the wireless handset establishes a connection with the media server, they may also be specified during the connection process. For instance, the wireless handset may establish a connection with the media server by sending a SIP INVITE message. The SIP INVITE message can

include within the body of the message a Session Description Protocol (SDP) structure describing the presentation capabilities of the wireless handset. The SDP may describe, for instance, what audio/video capabilities are available, the make and model of the wireless handset, available applications or other properties. The SDP protocol is

5 described in further detail in the Internet Engineering Task Force Request for Comment 2327, Handley et al., April 1998, which is incorporated herein by reference in its entirety.

By determining the presentation capabilities of the wireless handset and its applications, the media server may tailor its content for a particular wireless handset. For instance, the media server may only provide the wireless handset with streaming media

10 content that is supported by the wireless handset. A wireless handset may not be able to support all types of streaming media content, because streaming media content may be provided to the wireless handset in a variety of different transmission modes, and all the transmission modes may not be supported by the wireless handset or by its applications. The streaming media content may also not be supported, because the streaming media

15 content may utilize a variety of different outputs or other features that may not be supported by the wireless handset.

For example, certain real-time media content can be streamed to a wireless handset at various different transmission modes, each of which may consume a different level of bandwidth. In one transmission mode, media content that contains audio and

20 video could be transmitted to a wireless handset in a "full experience" mode, including both the audio and video. Alternatively, in another transmission mode, the media content could be transmitted to the wireless handset in a scaled down "audio-with-stills" mode, made up of the audio and periodic, still images from the video. Still alternatively, in yet

another transmission mode, the media content could be transmitted to the wireless handset in a further scaled down "audio-only" mode, omitting any video and still images. The full experience mode generally consumes the most bandwidth, while the audio-with-stills mode consumes less bandwidth, and the audio-only mode consumes even less bandwidth.

The wireless handset may connect to the Internet over a connection that limits its available bandwidth. Therefore, the wireless handset may not be able to receive information at the high bandwidth required to support the "full experience" audio and video transmission mode. As another example, the wireless handset may not have a display screen, and, therefore, it cannot fully support transmission modes that stream video or provide stills to the wireless handset. In yet another example, the media server may stream video at a certain frame rate, and the display on the wireless handset may not be capable of displaying video at that frame rate. Therefore, the wireless device may not fully support that transmission mode. In another example, the application running on the handset may only support playing audio. It may not be capable of receiving and displaying video. Therefore, any transmission mode that sends video to the application would not be fully supported.

In addition, the transmission modes may provide streaming media content in many different formats, and these may also limit the wireless handset's capabilities. The wireless handset generally includes one or more media player applications, which function to receive streaming media content and present the media content to the user. The applications may be capable of receiving data in one or more formats; however, if the format used by the media server is not supported by the wireless handset or its

applications, then the streaming media content may not be properly displayed or presented to the user. In addition to outputting the audio, video or other signals, the application may include controls selectable by the user to play, pause, stop, rewind or fast-forward the streaming media content, and these features may not function properly if the media content format is not supported by the media player application.

In order to properly output streaming media content on the wireless handset, the media player application should support the format used by the streaming media content. A format may include a procedure for converting audio, video or other data into a binary representation. The binary representation can then be stored on the media server and eventually streamed to the media player application on the wireless handset. Using the format, the media player application can interpret the stream of bits and convert the binary representation back into the original audio and video forms. If the media player application does not support the format of the media content, the media player application may not be able to properly convert the binary data back into the original signal. While a media player application may support one or more formats, it does not necessarily support all possible formats. Therefore, the media player application may limit the presentation capabilities of the wireless handset.

Once the wireless handset's presentation capabilities have been determined, the media server may provide the wireless handset with a list of available media content.

The list of available media content may be based on the presentation capabilities of the wireless handset. The list may reflect the transmission modes supported by the wireless handset, the transmission modes supported by the applications, transmission modes specified by the user, or other factors.

The media server may tailor the media content choices presented to the user based on the wireless handset's media presentation capabilities. In one embodiment of tailoring the media content, the media server only provides the wireless handset with media content supported by the wireless handset. Figure 3 is a flowchart that depicts one possible embodiment for providing a wireless handset with tailored media content. At Step 150, the media server provides a user with a list of media content. Then, at Step 152, the user selects one of the media content choices, and that choice is sent to the media server. Next, at Step 154, the media server provides the user with a list of transmission modes for the selected media content, and the list of transmission modes may be tailored to the presentation capabilities of the wireless handset. The media server may tailor the list of transmission modes, for instance, by beginning with a full set of transmission modes and then removing from that set those transmission modes that are unnecessary for the media type and/or that are not supported by the wireless handset. Many other ways also exist to determine appropriate media content for a wireless handset, and these may also be used. The tailored list of transmission modes for the media content selection is sent to the user, and then, at Step 156, the user selects one of the transmission modes.

Alternatively, the media server may tailor the media content and transmission modes before providing media content choices to the user. Figure 4 is a flowchart that depicts one possible embodiment of a method for tailoring media content before providing the media content choices to a user. At Step 200, the media server finds media content choices and their respective transmission modes. Then, at Step 202, the media server eliminates one or more media content choices and transmission modes based on the wireless handset's presentation capabilities. The media server may tailor the content,

for example, by starting with the media content choices and then eliminating the media content choices that cannot be transmitted using one of the transmission modes specified by the wireless handset's presentation capabilities. After the media server has tailored the media content choices, the media server, at Step 204, sends the wireless handset the tailored list of media content and transmission modes. The user, at Step 206, then makes a media content and transmission mode choice.

In creating the list of permissible transmission modes, the media server can take into account the presentation capabilities of the wireless handset, which may have been previously determined. For instance, if the wireless handset does not have a display screen, then the media server may only provide the user with audio media content choices. In another example, the wireless handset may only support a specific maximum bit rate for receiving data. Then, the media server may only provide the user with choices for media content in transmission modes that have a bit rate below that maximum bit rate for the wireless handset. In another example, the media server only provides the user with media content choices for which the wireless handset has a media application to support the media content's format. Of course, these examples are not exhaustive; the media server may limit the media content choices provided to the user based on any of the limitations of the wireless handset, its applications or other specified selections.

For example, the type of media content may limit the transmission mode choices, because some of transmission modes may not make sense. For instance, if the media content is audio-only, it would make little or no sense to offer the full-experience mode or the audio-with still options to the user. If the media content is video only, then different audio options may not be offered. However, if the media content is multimedia



including video and audio, then the user may receive a full range of audio and video presentation options. The media server may automatically limit the transmission mode choices to the user based on these criteria, because they do not necessarily depend on the wireless device limitations and application limitations provided to the media server.

5           Limiting the transmission mode choices provided to a wireless handset user may limit the amount of data transferred over the network. By tailoring the transmission mode choices to the wireless handset's presentation capabilities, the media server may send less than all of the possible choices to the wireless handset. The reduced number of choices sent to the wireless handset may require fewer bits to be transmitted to the  
10 wireless handset, and by sending fewer overall bits the media content choices may reach the wireless handset faster.

Reducing the amount of data sent from the media server to the wireless handset may also have benefits for the other wireless network users. The wireless network may be constrained in the amount of data it can simultaneously exchange between its users.

15 Therefore, sending less data between the media server and the wireless handset may free more bandwidth for other wireless network users. Additionally, the amount of data traveling on the wireless network may affect the speed with which that data is exchanged between devices. As more data travels across the network, the speed of the data generally slows down. Therefore, reducing the amount of data sent from the media  
20 server to the wireless handset may increase the data speed for the wireless handset and the media server, and it may increase the data speed for other users on the wireless network.

Additionally, in a typical wireless network that supports streaming media content to a wireless handset, the user of the wireless handset may be charged based on the amount of data that is transmitted to the wireless handset. The amount of data may be measured in the number of bits, bytes or packets sent. It may also be measured in a different way. By reducing the number of overall bits sent to the wireless handset, the amount charged to the user may be reduced. Therefore, a user may want to limit the transmission modes choices by changing the wireless handset's or an application's configuration.

A user might also be charged based on the speed of the connection. Thus, given that media content can be streamed to the wireless handset at different data rates, the user might opt to have the media transmitted at a lower rate in order to reduce the cost of transmission. Limiting the transmission mode choices provided to the user can allow the user to stay within particular bandwidth limitations. Therefore, a user may want to program the wireless handset or the applications to only show media content choice for transmission modes that stream data at less than the specified bit rate.

Additionally, providing all possible media content choices to the user may mean that a user must wade through a vast number of possible choices before making a selection, and many of the choices may not even be supported by the wireless handset or its applications. By limiting the media content choices presented to the user, the user may have less choices to choose from and may be able to make a selection in a shorter amount of time. Limiting the media content choices presented to the user may also help prevent a user from making an erroneous choice and selecting media content that is not support by the wireless handset or by its applications.

Further, there may be times when a user has no practical use for a certain type of media presentation. For instance, if a user is driving a car, then the user may not be able to safely view video or still images sent to the user's wireless handset. The user may just want to receive audio. In that situation, the user might opt to have the media transmitted in the audio-only mode, and the user may configure the wireless handset so that only audio content choices are received from the media server. However, if the user is a passenger in a car, the user might prefer to receive the media in the full-experience mode, and the user may configure the wireless handset so that the media server provides all types of content choices to the wireless handset.

Once the available transmission modes have been provided to the user, the user then selects a specific transmission mode. Figure 5 is a flowchart that shows one example process for selecting a transmission mode. At Step 250, the wireless handset sends a standard or proprietary session initiation request, such as a SIP INVITE message, to the media server. Upon receipt of the request, the media server sends a standard or proprietary signal to the media player directing the media player to prompt the user to select from a number of transmission modes, which is depicted at Step 252. At Step 254, the user then selects one of the indicated transmission modes, and, at Step 256, the media player sends a standard or proprietary signal to the media server indicating the selected transmission mode. The media server may then use this selected transmission mode in streaming media content to the client device.

Figure 6 is a flowchart that shows another example method for selecting media content and a transmission mode. At Step 300, the wireless handset user browses to a web card. The web card may be a "choice card", and, at Step 302, the web card presents

the user with choices of media content. At Step 304, the user selects the desired media content. In turn, the media server may send a MODE-CHOICE web card to the wireless handset. The MODE-CHOICE web card may also be a choice card and may present the user with choices of streaming media transmission modes, shown at Step 306. The

5 MODE-CHOICE card may be coded such that, when the user selects one of the transmission mode choices, the browser in turn sends the media server a corresponding signal indicating the chosen transmission mode, shown at Step 308. Finally, at Step 310, the media server streams the media content to the wireless handset at the chosen transmission mode. While it is possible that one device, such as a media server, provides

10 media content choices and transmission modes to the client device, and another device, such as a media server, streams the media content to the client device, it is preferred that the same device performs both functions.

An exemplary embodiment of the present invention has been described above. Those skilled in the art will understand, however, that changes and modifications may be

15 made to this embodiment without departing from the true scope and spirit of the present invention, which is defined by the claims.